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A Search for *Parelaphostrongylus andersoni* in White-Tailed Deer from Maine

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ABSTRACT: Longissimus dorsi muscles from 42 white-tailed deer (*Odocoileus virginianus*) from Maine (USA) were examined for the *Parelaphostrongylus andersoni*. No adult nematodes were found. Prevalence based on the Poisson approximation of a binomial distribution could have been between 0 and 9% (95% C.I.). However, based on prevalence documented elsewhere (10 to 18%), it is unlikely that *P. andersoni* occurs in white-tailed deer in central Maine.

Key words: *Parelaphostrongylus andersoni*, musclemworm, distribution, metastrongyloid parasites, white-tailed deer, *Odocoileus virginianus*, survey.

Parelaphostrongylus andersoni, or musclemworm, is a metastrongyloid nematode found within or adjacent to blood vessels in musculature surrounding the lumbar vertebrae and upper hind legs of white-tailed deer (*Odocoileus virginianus*) (Prestwood, 1972; Pybus and Samuel, 1984) and caribou (*Rangifer tarandus*) (Lankester and Hauta, 1989). Musclemworm has been found in white-tailed deer throughout the southeastern United States (Prestwood et al., 1974), in New Jersey (Pursglove, 1977), British Columbia (Pybus and Samuel, 1981) and Michigan (Pybus et al., 1990) and in caribou of northcentral and northeastern Canada (Lankester and Hauta, 1989). Five metastrongyloid parasites infecting cervids in North America produce dorsal-spined larvae (*Parelaphostrongylus tenuis*, *P. andersoni*, *P. odocoilei*, *Elaphostrongylus cervi* and *Varestrongylus alpenae*) (Pybus and Samuel, 1981). However, only *P. tenuis* is known to exist in Maine (Gilbert, 1973). Considering geographic distributions and host requirements of these parasites, *P. andersoni* could occur in the northeastern USA, and recent reports that extended the range of *P. andersoni* (Lankester and Hauta, 1989; Pybus et al., 1990) throughout North Amer-

ica led me to believe this parasite could occur in Maine. Therefore, the objective of this survey was to determine if *P. andersoni* occurs in deer of Maine.

Deer were collected from September 1988 to October 1989, although most were obtained from April to September 1989 from vehicle/deer collisions. Only backstraps not traumatized by collision were examined. Fawns killed during their first summer were not examined because they would have been recently infected, thus worms may not have matured and migrated to the backstraps. Deer age class (fawn = <1 yr; yearling = ≥1 and <2 yr; adult = ≥2 yr) was determined by tooth wear and replacement (Severinghaus, 1949). Deer densities in the collection area ranged from two–six deer/km² (Maine Department of Inland Fisheries and Wildlife, unpubl. data).

Pybus and Samuel (1981, 1984) and Prestwood et al. (1974) emphasized that *P. andersoni* displayed a preference for the longissimus dorsi (backstrap). In this study, backstraps were removed and examined following Lankester and Hauta (1989). Forty-two white-tailed deer from Maine, three female fawns, five male fawns, eight female yearlings, five male yearlings, 17 female adults, and four male adults, were examined for adult *P. andersoni*. Twenty-eight specimens were collected from or immediately adjacent to southern Penobscot County, six from coastal eastern Maine, three from Franklin County, two each from York and southern Oxford Counties, and one from northern Piscataquis County (general area 43°00' to 45°50'N, 67°00' to 71°00'W). Five samples were examined immediately after receipt, all others were frozen from three days to seven months before being examined.

Thirty of 42 deer were from central Maine (43°50' to 45°00'N, 70°00' to 71°00'W), where Maine's highest deer densities occur (5 to 6 deer/km², Maine Department of Inland Fisheries and Wildlife, unpubl. data). No adult *P. andersoni* were found in any of the deer examined.

Although no nematodes were found, the possibility remains that *P. andersoni* occurs in Maine. A Poisson approximation of the binomial distribution (Fells, 1968; Chemical Rubber Company, 1968) was used to obtain an estimated prevalence of musclemworm given the number of deer examined. Ninety-five percent confidence limits around the estimated prevalence of zero were 0 and 8.8%.

Prestwood et al. (1974), using methods similar to this study, found *P. andersoni* in backstraps of 18% ($n = 121$) of white-tailed deer from South Carolina, and Pursglove (1977), also examining backstraps, found musclemworm in 10% ($n = 10$) of deer in New Jersey. Furthermore, Prestwood et al. (1974) suggested presence of this parasite could probably be detected if five deer were examined, but cautioned that five may be inadequate where prevalence is low. Therefore, the probability of *P. andersoni* being present in central Maine is slight, and I suggest that *P. andersoni* is probably not present in central Maine.

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